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COMBINED FOLDABLE TOOTHBRUSH AND POWDERED DENTIFRICE DISPENSER

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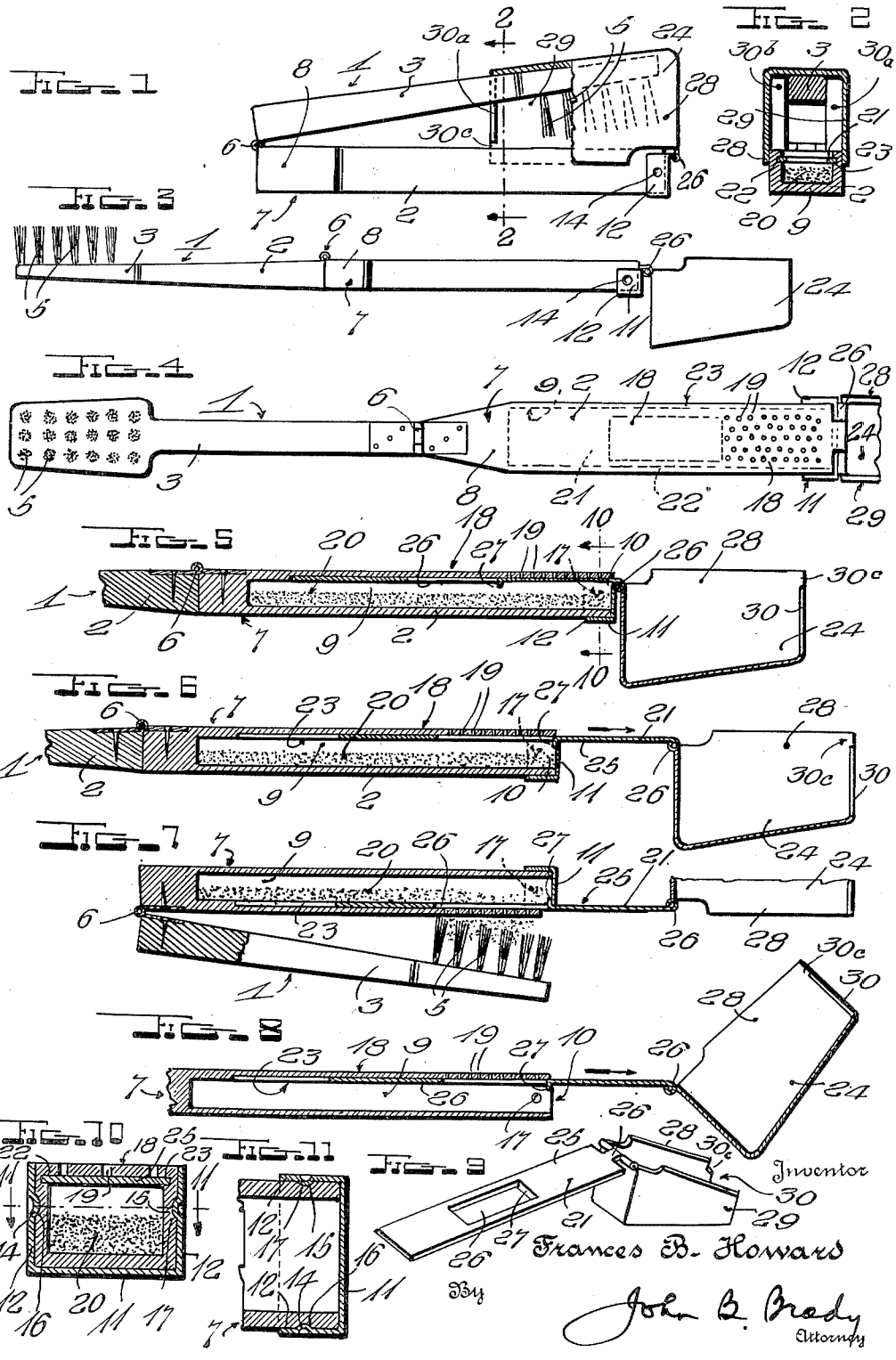

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COMBINED FOLDABLE TOOTHBRUSH AND POWDERED DENTIFRICE DISPENSER

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5 Claims. (Cl. 15—138)

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My invention relates broadly to tooth brushes and more particularly to a combined foldable tooth brush and powdered dentifrice dispenser.

One of the objects of my invention is to provide an improved construction of foldable tooth brush having means for controlling the dispensing of powdered dentifrice to the tooth brush.

Another object of my invention is to provide a construction of foldable tooth brush and dentifrice controlling valve device for distributing the required quantity of dentifrice to the brush and protecting the brush when the tooth brush is not in use.

Another object of my invention is to provide a construction of foldable tooth brush wherein a protective hood for the brush when unfolded in coaction with the foldable handle of the tooth brush forms a substantially continuous support for the brush which may be readily operated by holding the extended portion of the handle and hood in a position in which the fingers may readily control the supply of dentifrice to the brush without the necessity of removal of any parts.

Another object of my invention is to provide a novel and improved construction of closure for the powder reservoir of the foldable tooth brush permitting ready access to the reservoir for the addition of renewed powdered dentifrice with means for controlling the delivery of powdered dentifrice to the brush.

Other and further objects of my invention reside in an improved construction of foldable tooth brush and dentifrice supply means therefor as set forth more fully in the specification hereinafter following by reference to the accompanying drawings in which:

Figure 1 is a side elevational view of the improved foldable tooth brush in folded position with a portion of the protective hood broken away and showing the bristles of the tooth brush in elevation therein; Fig. 2 is a transverse sectional view taken substantially on line 2—2 of Fig. 1; Fig. 3 is a side elevational view showing the foldable tooth brush of my invention in unfolded position ready for use; Fig. 4 is an enlarged plan view of the tooth brush in unfolded position on a somewhat larger scale and showing particularly the container for powdered dentifrice and the apertures which extend through the tooth brush handle; Fig. 5 is a fragmentary longitudinal sectional view taken through the section of the tooth brush which includes the container for powdered dentifrice, the slide valve, the closure cap for the container and the pivoted protective hood connected to the slide valve, the slide valve being

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shown in the position in which the tooth brush is used for brushing the teeth, that is, with the slide valve moved to a position closing the perforations and preventing the sifting of powdered dentifrice from the container; Fig. 6 is a view similar to the view illustrated in Fig. 5 but illustrating the slide valve moved to an opposite limiting position to that illustrated in Fig. 5 for rendering the perforations effective for discharging powdered dentifrice to the tooth brush when the tooth brush sections are folded with respect to each other as illustrated in Fig. 7; Fig. 7 shows the sections of the tooth brush in folded relation for sifting the powdered dentifrice from the container to the tooth brush; Fig. 8 illustrates a fragmentary portion of the container ready to receive the closure cap on the end thereof; Fig. 9 is a perspective view of the slide valve and hood hingedly connected thereto; Fig. 10 is a transverse sectional view taken on line 10—10 of Fig. 5; and Fig. 11 is a horizontal sectional view taken on line 11—11 of Fig. 10.

My invention is directed to an improved construction of foldable tooth brush with powder dispenser which may be inexpensively manufactured on a mass production scale. The foldable tooth brush of my invention is particularly useful to traveling people, business people, and those in the military services, as the tooth brush complete with a dentifrice supply occupies a very small overall space and can be conveniently carried in a purse or pocket. The tooth brush of my invention is capable of being molded from plastic material in a very small number of parts, one of which forms a support for the bristles of the tooth brush, another of which serves as a reservoir for powdered dentifrice, another of which consists of a protective hood for normally enclosing the bristles of the brush, another of which consists of a slide valve connected with the protective hood and serving in either of two limiting positions thereof to permit the delivery of powdered dentifrice to the brush or to maintain the powder reservoir closed, and the other of which comprises a closure cap for the powdered dentifrice container. I provide means for limiting the outward movement of the slide valve so that when the parts have been assembled the protective hood may be used as a handle device to control the position of the valve to thereby permit the delivery or prevent the delivery of powdered dentifrice. I provide a closure cap of special construction which forms a tight-fitting connection with the reservoir to permit the addition of tooth powder to the reservoir from time to time

for re-filling. The protective hood used in association with the tooth brush structure serves three functions; that is, as a means for facilitating the movements of the slide valve for moving the valve to either of two limiting positions; protection of the bristles of the tooth brush while at the same time preventing dampness from the bristles of the brush from injuring any articles which may be adjacent the folded tooth brush; and as a securing means for fastening the parts of the foldable tooth brush together while the brush is not in use.

Referring to the drawings in more detail, reference character 1 designates one section of the foldable tooth brush of my invention consisting of a short handle portion 2 and a tooth brush supporting portion 3, which carries the tooth brush bristles represented at 5 projecting substantially normally to the plane of the tooth brush supporting portion 3. The tooth brush supporting portion 3 is located adjacent one end of the handle portion 2 and a hinged connection 6 is located adjacent the opposite end of the handle portion 2 for providing a hinged connection with the aligned longitudinally extending section 7 of the tooth brush. The longitudinally extending section 7 is enlarged in transverse section with respect to the handle portion 2 of section 1 by means of an outwardly tapered portion indicated at 8 which forms a housing for a longitudinally extending interior container 9 for powdered dentifrice. The container 9 extends substantially the full length of the section 7 of the tooth brush and serves to receive sufficient powdered dentifrice for use over a period of a week or several days making it unnecessary for a traveling man or those in the military services to be burdened with an extra container for powdered dentifrice inasmuch as the required powdered dentifrice is carried at all times within the tooth brush handle itself. The hollow handle section 7 is open at the end 10 thereof for the replenishment of the powdered dentifrice supply as may be required and a removable closure cap shown at 11 is provided for establishing snap-on and snap-off connection with the open end of the container 9 of the handle portion 7 for maintaining the container 9 closed. The closure cap 11 is provided with a yieldable skirt portion 12 extending peripherally around the external portion of the end 10 of the container 9 and frictionally engaging the external walls of the container 9 supplemented by the added snap-on and snap-off advantages obtained by the instruck projections 14 and 15 in the yieldable sides 12 of the closure cap attached to engage aligned recesses 16 and 17 in the interior side walls of the container 9 of section 7 of the tooth brush.

Section 7 of the tooth brush is provided adjacent the end 10 thereof in the flat portion of the surface of the container represented at 18 with a multiplicity of perforations which I have indicated at 19 extending through the flat surface 18 and connecting to the interior of the container 9. These perforations 19 serve as a means for allowing the sprinkling or discharging of powdered dentifrice which I have designated generally at 20 within container 9 on to the bristles 5 of the tooth brush when the sections 1 and 7 are folded one upon the other and held in the position illustrated in Fig. 7 and the slide valve 21 moved to the position shown in Fig. 7 to allow shaking of the folded tooth brush for distributing the powdered dentifrice from the container on to the bristles of the tooth brush at 5.

The slide valve 21 is constituted by a longitudinally extending strip somewhat shorter than the length of the section 7 of the tooth brush and engageable in oppositely aligned guide grooves 22 and 23 in the interior walls of the container 9. The grooves 22 and 23 serve as continuous guides for the longitudinally extending slide valve 21 which is free to be shifted to either of two limiting positions by grasping the protective hood 24 in the fingers and manually sliding slide valve 21 longitudinally of the section 7 of the tooth brush. The slide valve 21 includes a slotted portion 25 and an apertured portion 26. When the protective hood 24 which is hingedly connected with the end of the slide valve 21 by means of the hinged device indicated at 26 is moved to the position illustrated in Figs. 3, 4 and 5, the slotted portion 25 of the slide valve 21 is aligned with the perforated portion 19 of the container 9 and obstructs or prevents the discharge of any powdered dentifrice from container 9 through the perforations. When, however, the protective hood 24 is grasped and the slide valve 21 pulled outwardly, the apertured portion 26 thereof becomes aligned with perforations 19 thus uncovering the perforations 19 and allowing the powdered dentifrice to be sprinkled or discharged upon the bristles 5 of the tooth brush. In order to preclude or restrict the slide valve 21 from becoming separated from the tooth brush in normal conditions of operation I provide a limiting stop 27 on the slide valve 21 in a position adjacent the end of the apertured portion 25. Limiting stop 27 is an outstruck portion of the strip consisting of the slide valve and extends substantially normal to the plane of the slide valve 21 intermediate the slotted portion 25 and the apertured portion 26 on the slide valve 21 forming a positive abutment with the inside surface of the closure cap 11 when the slide valve is pulled outwardly by grasping and pulling upon the protective hood 24. The yieldable engagement of closure cap 11 with the end 10 of the container 9 of section 7 of the tooth brush is sufficiently resistive to normally prevent the slide valve 21 from being drawn outwardly beyond the limit intended for registering aperture 26 with perforations 19.

However, the assembly of the slide valve 21 with respect to container 9 is such that by removing the closure cap 11 from the end 10 of container 9, the slide valve 21 may be wholly removed from the container 9 for the purpose of washing and cleaning the parts. Re-assembly is extremely simple as it is only necessary to move slide valve 21 into the guide grooves 22 and 23 to the point where abutment 27 is well within the open end of container 9 whereupon the yieldable closure cap 11 is inserted over the end 10 of the container 9 for maintaining the valve 21 against normal removal during the intended operation illustrated in Figs. 6 and 7.

In the position illustrated in Fig. 8 the closure cap 11 has been wholly removed and container 9 is ready for filling with powdered dentifrice in a quantity sufficient to last a week or several days. After filling the container 9 the closure cap 11 is re-applied to the end 10 and the tooth brush is thus filled with the required supply of powdered dentifrice.

The protective hood 24 is shaped in a very special manner with skirted walls on opposite sides of the hood 24 as represented at 28 and 29 which are of sufficient length to frictionally engage opposite sides of the section 7 of the tooth brush for effecting the binding relation between

the sections 1 and 7 of the tooth brush when the tooth brush is folded to the position illustrated in Figs. 1 and 2. In addition to this frictional bond I also provide a longitudinally extending slot 30 in the end wall of the protective hood which is sufficiently wide to enable the hood 24 when in folded position to be moved fully over the handle section portion 2 of the tooth brush. In this position the inwardly skirted edges of the slotted portion 30 represented at 30*a* and 30*b* establish frictional binding relation with opposite sides of the handle portion 2 of section 1 for thereby increasing the binding relation to secure the folded sections 1 and 7 together permitting the tooth brush to be carried in folded position in a purse or pocket without danger of the parts separating. To enable the protective hood 24 to be closed to the maximum extent over the bristles 5 of the tooth brush and to allow the yieldable side walls 28 and 29 to establish frictional wiping engagement with the external side walls of the container 9 I cut away each of the corner portions of the slot 30 as I have indicated generally at 30*c*.

When the tooth brush is in use with the parts illustrated in Fig. 3, sections 1 and 7 are held in substantial alignment in the hand and protective hood 24 extends in a longitudinal direction substantially aligned with section 7 of the tooth brush in the arrangement illustrated in Fig. 3. By quickly drawing the protective hood 24 outwardly, slide valve 21 is shifted to a position where apertured portion 26 uncovers perforations 19 as illustrated in Fig. 6. Then the section 1 of the tooth brush is folded against the section 7 and the assembly reversed and slightly tapped or shaken to allow the powdered dentifrice to be shaken from the container 9 on the bristles 5 of the tooth brush. When the bristles 5 of the tooth brush are thus charged with the powdered dentifrice the protective hood is pushed inwardly toward the section 7 of the tooth brush moving slide valve 21 to the position shown in Fig. 5 in which slotted portion 25 of slide valve 21 closes the perforations 19 whereupon section 1 is swung outwardly to a position of alignment with section 7 with the several parts aligned in the position illustrated in Fig. 3 and the tooth brush is ready for use. After the brushing operation is completed bristles 5 may be washed and then the tooth brush folded to the position illustrated in Figs. 1 and 2 and returned to the purse or pocket for carrying purposes. The open slot 30 permits the circulation of air to the bristles 5 for the rapid drying of the tooth brush while the protective hood prevents any unsanitary contact with the bristles 5 and precludes, in a large measure, any dampness from seeping out from the folded tooth brush to adjacent articles which may be carried in the purse or pocket.

While I have described my invention in one of its preferred embodiments I realize that changes in detail and modifications in construction may be made and I do not intend any limitations upon my invention except as may be imposed by the scope of the appended claims.

What I claim and desire to secure by Letters Patent of the United States is as follows:

1. A combination foldable tooth brush and powdered dentifrice dispenser comprising a handle constituted by a pair of sections hingedly connected end to end and movable from a substantially extended position to a position in which said sections are folded one adjacent the other, a tooth brush carried adjacent the end of one of said sections, a container for powdered dentifrice carried by the other of said sections, said container section being perforated for the delivery of powdered dentifrice to the tooth brush when the sections are folded together, a valve slidable to either of two limiting positions, one of which blocks discharge of powdered dentifrice through the perforations in said container and the other of which permits delivery of powdered dentifrice from the container to the brush, said slide valve having an abutment stop extending normal to the plane thereof, and a closure cap removably secured to the end of said container and normally obstructing the removal of said slide valve with respect to said container by the restrictive coaction between said abutment and said closure cap.

2. A combination foldable tooth brush and powdered dentifrice dispenser comprising a handle constituted by a pair of sections hingedly connected end to end and movable from a substantially extended position to a position in which said sections are folded one adjacent the other, a tooth brush carried adjacent the end of one of said sections, a container for powdered dentifrice carried by the other of said sections, said container being perforated for the delivery of powdered dentifrice to the tooth brush when the sections are folded together, a slide valve slidable to either of two limiting positions within said container, one of which blocks discharge of powdered dentifrice through the perforations in said container and the other of which permits delivery of powdered dentifrice from the container to the brush, a detachable closure cap for the end of said container and extending in a plane normal to the plane of said slide valve, and a lug projecting from said slide valve and adapted to abut against the side edge of said closure cap for obstructing the removal of said slide valve from said container, a detachable closure cap for the end of said container and extending in a plane normal to the plane of said slide-like valve, and a lug projecting from said slide-like valve and adapted to abut against the side edge of said closure cap for obstructing the removal of said slide-like valve from said container.

3. A combination foldable tooth brush and powdered dentifrice dispenser comprising a handle constituted by a pair of sections hingedly connected end to end and movable from a substantially extended position to a position in which said section are folded one adjacent the other, a tooth brush carried adjacent the end of one of said sections, a container for powdered dentifrice carried by the other of said sections, said container being perforated for the delivery of powdered dentifrice to the tooth brush when the sections are folded together, and a third section comprising a protective hood hingedly connected adjacent the end of said container section and adapted to be extended in a substantially linear direction with respect to said first mentioned sections and movable to a position enclosing said tooth brush when said first mentioned sections are folded together, said protective hood having a coextensive bifurcated end portion for frictionally engaging opposite sides of said first mentioned section of said tooth brush and having a pair of coextensive resilient side walls operative to engage opposite sides of said second mentioned section for protecting said brush and maintaining said sections in folded relation.

4. A combination foldable tooth brush and powdered dentifrice dispenser comprising a handle constituted by a pair of sections hingedly con-

nected end to end and movable from a substantially extended position to a position in which said sections are folded one adjacent the other, a tooth brush carried adjacent the end of one of said sections, a container for powdered dentifrice carried by the other of said sections, said container being perforated for the delivery of powdered dentifrice to the tooth brush when the sections are folded together, a protective hood hingedly connected adjacent the end of one of said sections and movable to a position enclosing said tooth brush when said sections are folded together and a pair of resilient side walls associated with said protective hood and frictionally engageable with both of said hingedly connected sections when in folded relation for protecting said brush and maintaining said sections in folded position.

5. A foldable tooth brush and powdered dentifrice dispenser comprising a handle constituted by a pair of sections hingedly connected end to end and movable from a substantially extended position to a position in which said sections are folded, one adjacent the other, a tooth brush carried adjacent the end of one of said sections, a container for powdered dentifrice carried by the other of said sections, said container being perforated for the delivery of powdered dentifrice to the tooth brush when the sections are folded together, and a third section adapted to be extended in alignment with the aforesaid sections when in unfolded relation, comprising a hood hingedly connected with respect to one of said first mentioned sections and operative to embrace both of said first mentioned sections when said first mentioned sections are folded together, said hood including a pair of yieldable parallel extending side walls having a depth substantially greater than the projection of said tooth brush from said first mentioned section and operative to envelope the tooth brush and engage the exterior side walls of said container for yieldably and frictionally maintaining said first mentioned sections in detachable folded position, one with respect to the other.

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